

in the near future to some such discovery.—S. PRESCOTT FAY, *Boston, Mass.*

Number of Species and Subspecies in the New A. O. U. Check-List: A Correction.—In 'The Auk' for October, 1910 (XXVII, pp. 468, 469), the number of species in the third edition of the A. O. U. Check-List is given as 802, and the number of subspecies as 394, making a total of 1196 forms. Prof. W. W. Cooke later informed me that he made the numbers to be, respectively, 804, 396, 1200. A recount shows Professor Cooke's numbers to be correct, namely, 804 species, 396 subspecies, and 1200 forms.—J. A. A.

RECENT LITERATURE.

Carriker on the Birds of Costa Rica.¹—In this work of some 600 pages, our knowledge of Costa Rican birds is brought thoroughly up to date. The author's style is pleasing and his method of treatment is both modern and comprehensive. A total of 753 species and subspecies is recorded, with full citations of Costa Rican references and many hitherto unpublished records, based chiefly on the collections of Ridgway and Zeledon, Carriker, Underwood and Lankester.

The local distribution is well worked out and treated in more detail than in any previous work. Under almost every species are interesting notes on the life history, from the author's own experiences, in many cases with descriptions of nest and eggs. These form an important addition to our knowledge of Neotropical bird-life. Under the Tanagers and Finches Mr. W. E. C. Todd has incorporated in the text many valuable critical notes. Keys are given to the species of most of the lower groups as far as the Cotingidæ, with the evident intention of supplementing those in the first four volumes of Ridgway's 'Birds of North and Middle America.'

The 60 pages of introductory matter treat, among other subjects, of "Geography and Physiography," "The Life Zones" and "History of the Ornithology of Costa Rica." A Bibliography is of course included, and a comprehensive descriptive list of localities at which birds have been collected. Some general notes on the habits of both the winter visitant and the resident species are also to be found here. At the end of the volume is a large folding map of Costa Rica.

¹ An Annotated List of the Birds of Costa Rica including Cocos Island. By M. A. Carriker, Jr. Reprinted from *Annals of the Carnegie Museum*, Vol. VI, pp. 314-915, with map. "Issued August 29, 1910."

Mr. Carriker's division of Costa Rica into life-zones deserves careful consideration. Three Primary Areas, Boreal, Sonoran and Tropical, are recognized. These are divided into six Regions, and these again into fourteen Zones or belts. Judging by this list it is certainly true, as the author states, after referring to the life zones of North America, that: "In Central America, however, we have a much more complicated state of affairs than in North America," for "some zones or belts of the Tropical occupy exactly the same ground as some of the Sonoran, so that it is only by studying the affinities of the various species and determining whether they are modified Tropical or Sonoran forms, that we are able to account for their presence in certain regions and give a reasonable explanation of the finding of two widely different types in apparently the same zone."

The practicability of such an arrangement is open to doubt, particularly as the determination of the origin of many species is by no means an easy matter and we fear that the author's attempt to draw a line between "Tropical" and "Sonoran" species has not been wholly successful. For example, the correctness of ascribing a northern origin to such species as *Planesticus nigrescens*, *Myioborus torquatus*, *Pheucticus tibialis*, *Amaurospiza concolor*, *Phainoptila melanoxantha* and several others is surely very doubtful.

A notable feature of the Costa Rica avifauna is the remarkable rarity of many of the resident species. Some of these are not found outside of Costa Rica and the adjoining parts of Panama, and their rarity is believed to be actual, and not merely apparent as in the case of many very local species or those of retiring habits or found in inaccessible places. The author believes that these rare species "belong to a vanishing fauna, and for reasons of high specialization, interbreeding, or inability to hold their own in the ever present struggle for the survival of the fittest, are slowly disappearing." With so large and varied a bird population concentrated in so restricted an area it is natural that many species should be able to exist only in small numbers, and thus be ever in danger of extermination. This fate has doubtless already overtaken several species and may explain the apparent absence of a number of forms that have been found both north and south of Costa Rica, as, for example, *Amaurolimnas*, *Rhopoterpe*, *Pyrocephalus*, *Myrmeciza lawrencei*, *Gampsonyx*, *Ictinia*, *Ceryle inda* and *Rhynchortyx*.

There are several interesting facts in regard to the Costa Rica avifauna and some interesting comparisons that may be made, that have not been brought out by the author and it may be worth the space to go over them here.

As stated above the total number of forms given is 753. From this number the five Cocos Island species may be subtracted as being not truly Costa Rican, leaving 748 species and subspecies. Deducting the latter, of which there are about 33, we have 715 full species remaining.

It is of interest to compare this total with the number of species known from the region covered by the A. O. U. Check-List. From this vast area,

the entire North American continent north of Mexico, including also Greenland, Lower California and numerous islands, the total recorded number of forms is 1200. The proportion of Accidental Visitants (81) and subspecies (385) is far higher than in the case of Costa Rica. Deducting these leaves 734 full species, only a few more than the number known from Costa Rica.

When it is considered that the whole of Costa Rica is not as large as the peninsula of Florida, the wonderful richness and variety of its bird life — undoubtedly one of the most remarkable bird faunas in the world — will be appreciated.

About 120 of these Costa Rica forms are winter visitors or transients (several North American migratory species are represented by two subspecies). Leaving these out of account, and also making allowance for 3 or 4 stragglers over the southern boundary, and an equal number of doubtful species known from only a single specimen, we find a round 600 species constituting the resident avifauna of Costa Rica.

Many genera of the smaller birds are remarkably represented. Thus *Trogon* and *Euphonia* have each nine species, *Tangara* (*Calliste*) has seven species and one subspecies, *Thryophilus*, seven, *Catharus*, *Columba* and *Geotrygon* each have six, *Basileuterus* is represented by five species and two subspecies, *Salpator* by five species and two subspecies, and *Planesticus* by five species and one subspecies.

Many of the "lower" groups on the other hand make a comparatively poor showing; thus there are only four breeding species of Anseres. Many genera represented by breeding forms in both the Nearctic region and South America are here wanting or occur only as migrants. The astonishing number of four families, 50 genera and 205 full species are not known to range beyond the northern boundary of Costa Rica.

A new genus *Dicrorhynchus* is proposed by Mr. Carriker for the curious barbet, *Tetragonops frantzii* Selater. It is distinguished structurally from its only other near relative, *Semnornis rhamphastinus*, solely by a slight difference in the form of the bill, differing otherwise only in coloration.

The following new species and subspecies are named and described: *Columba flavirostris minima*, *C. nigrirostris brunneicauda*, *Chamepelia passerina neglecta*, *Selasphorus simoni* (nearest *S. ardens*), *Dendrocincla anabatina saturata*, *Campylorhamphus pusillus borealis* and *Corapipo altera albibarbis*.

This last subspecies, has lately been described by Dr. Hellmayr under the name *Corapipo leucorrhoea heteroleuca*, this name antedating that given by Mr. Carriker.

The three current subspecies *Attila citreopygus luteolus*, *Pachyrhamphus polychropterus similis* and *Pachysilvia ochraceiceps pallidipectus* are discussed and considered as not entitled to recognition.

Several forms usually accorded specific rank, namely *Urubitinga ridgwayi*, *Amazona salvini*, *Ceophæus scapularis*, *Agyrtria decora*, *Selasphorus torridus*, *Trogon underwoodi*, and *Euphonia gnatho*, are reduced to sub-

species, some of them, in our opinion, without sufficient reason, for though they are undoubtedly closely allied representative forms, no evidence of intergradation is brought forward. The new *Corapipo* also seems to us worthy of specific rank. On the other hand *Saltator intermedius* and *Astragalinus columbianus* are granted binomials.

The list of species and subspecies is so nearly complete that we have noticed the omission of only one form, *Sayornis nigricans nigricans*, for which there are two authentic Costa Rican records.

While *Ceryle inda* and *Tyrannus dominicensis* have apparently never been taken within the limits of this list, both have been found common at Greytown, Nicaragua, just across the line, and there can be no doubt of their occurrence in Costa Rica.

The occurrence of *Stelgidopteryx serripennis serripennis* as a breeding species is noteworthy, but it may be well to again call attention to the fact that the presence of black on the under tail coverts is not necessarily an indication of intergradation with any of the other forms of *Stelgidopteryx*, as this is a variation known to occur throughout the bird's range.

Very few if any typographical errors are discoverable, and the orthography of the scientific names, revised by Mr. Todd, is almost above criticism. There are a few inconsistencies in the gender endings not corrected in the "Errata," but few works are altogether free from these trifling defects.

The system of nomenclature is consistently trinomial, but in some cases where the specific name should be repeated to indicate the typical subspecies it has not been done.

Phainoptila is wrongly placed in the Ampelidæ; *Falco columbarius* is interpolated between *F. albigularis* and *F. aurantius*, which appear in the Key as *F. rufigularis* and *F. deiroleucus*; the Brown Pelican stands as *Pelecanus fuscus* instead of *P. occidentalis*.

The mere mention of these slight errors unduly magnifies their importance. Few of them are of any consequence and they do not detract from the general excellence of the work.

The absence of an index is an omission for which the author is probably not responsible. Doubtless there is one supplied with the complete volume of the 'Annals' from which this paper is reprinted, but a work of the size and importance of this deserves an index of its own.—W. DeW. M.

Ferry on a Collection of Birds from Costa Rica.¹— This is an annotated list of 74 species collected by the author in Costa Rica during January, February, and March, 1908, at various localities on the Atlantic slope, mainly at Guaybo, Coliblanco, and Turrialba. The annotations often include interesting notes on the habits and haunts of a number

¹ Catalogue of a Collection of Birds from Costa Rica. By John Farwell Ferry, Assistant, Division of Ornithology. Field Mus. Nat. Hist., Orn. Ser., Vol. I, No. 6, pp. 257-282. "September, 1910."